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FACSIMILE COVER SHEET

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CEX-010-98

To: Andy Ledford **March 21, 1995**
From: Phil Nixon

Subject: Results of Arsenic and Chromium Analysis in the IM/IRA-EA Decision Document

In response to our telephone conversation on Monday afternoon (March 20, 1995) I have reviewed the IM/IRA-EA Decision Document to determine how Arsenic and Chromium were eliminated from being Contaminants of Concern (COCs) in OU4 Soils. Arsenic and Chromium did not become Potential Contaminants of Concern (PCOCs) in that they were screened out through the statistical evaluation of the data. Attached are the results of the statistics which indicate that for arsenic:

1. The maximum OU4 concentration slightly exceeded the background 99% UTL concentration,

2. There were no maximum OU4 values that exceeded the Maximum background concentrations,

3. The number of OU4 values allowed to lie outside the background value with respect to the statistical slippage test was not exceeded (0 is less than 14),

4. The OU4 Quantile test value is 1 were as the required value for consideration as a PCOC is less than 0.05, and

5. The OU4 Gehan test result is -3.39143 were as the required value for consideration as a PCOC is greater than 1.645.

The Statistical results for Chromium are:

1. The maximum OU4 concentration exceeded the background 99% UTL concentration,

2. There were 14 OU4 values that exceeded the maximum background concentrations,

3. The number of OU4 values allowed to lie outside the background value with respect to the slippage test was not exceeded (14 equals 14),

4. The OU4 Quantile test value is 0.0761 were as the required value for consideration as a PCOC is less than 0.05, and

5. The OU4 Gehan test result is -1.21812 were as the required value for consideration as a PCOC is greater than 1.645.

These contaminants passed the statistical evaluation procedures and were not considered PCOCs. Therefore, OU4 95% UCLs and preliminary remediation goals were not calculated for soils.

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Table III.A-10. Summary of Statistical Evaluations:
Identification of Potential Inorganic Contaminants of Concern (PCOCs) in Surficial Soil
OU4, Solar Evaporation Ponds, IM/IRA-EA
Rocky Flats Environmental Technology Site, Golden, Colorado

Analyte - metals (mg/kg)	Background 95% UCL	Max >95% UTL background? (1)	Slippage test		Quantile test? (4)	Gehan test? (5)	Preliminary Conclusions (6)
			Exceeded? (2)	Allowed (5%)? (3)			
Aluminum	--	32500 > 21800	4	14	0.564	-2.46957	Not a potential COC
Antimony	--	24.8 > 14.6	2	14	0.0055	0.24226	Not a potential COC; all nondetects
Arsenic	--	8.3 > 8.0	0	14	1.0	-3.39143	Not a potential COC
Barium	--	393 < 670	1	14	0.874	-3.92542	Not a potential COC
Beryllium	0.92	9.6 > 1.5	12	14	0.00003	4.40185	Potential COC
Cadmium	0.64	382 > 1.8	40	16	0.00000	3.96768	Potential COC
Calcium	8282.95	248000 > 13600	30	14	0.00766	2.63276	Potential COC
Cesium	--	247 > 150	0	14	--	0.00000	Not a potential COC
Chromium	--	48.4 > 22.0	14	14	0.0761	-1.21812	Not a potential COC
Cobalt	--	51 > 24	1	16	0.839	-6.37687	Not a potential COC
Copper	--	77.5 > 22.2	8	14	0.246	-1.45668	Not a potential COC
Iron	--	37900 > 24900	1	14	0.878	-3.01414	Not a potential COC
Lead	--	121 > 51	4	14	0.537	-4.49701	Not a potential COC
Lithium	--	34.9 > 17.7	2	14	0.447	-4.20658	Not a potential COC
Magnesium	--	6500 > 6380	1	14	0.864	-2.73393	Not a potential COC
Manganese	--	7650 > 2220	1	14	0.857	-4.33366	Not a potential COC
Mercury	0.03	1.8 > 0.15	18	16	0.00862	1.38944	Potential COC
Molybdenum	--	9.9 > 5.8	0	14	--	0.00000	Not a potential COC
Nickel	--	176 > 19.1	4	14	0.253	-3.01958	Not a potential COC
Nitrate/Nitrite	1.11	1500 > 0.0048	37	16	0.00551	2.46759	Potential COC
Potassium	--	6620 > 5310	2	14	0.617	-4.08405	Not a potential COC
Selenium	--	0.99 > 0.76	0	14	0.364	-4.02583	Not a potential COC
Silicon	202.7	11300 > 2250	76	14	5E-14	5.31315	Potential COC
Silver	0.58	3.3 > 2.9	4	14	0.0173	4.87988	Potential COC
Sodium	165.4	2440 > 290	14	14	0.00013	0.40754	Potential COC
Strontium	--	510 > 109	7	14	0.379	0.01498	Not a potential COC
Sulfide	--	--	--	--	--	--	Not a potential COC
Thallium	--	0.99 > 0.58	4	14	0.00035	-4.90974	Not a potential COC; majority of samples collected nondetects
Tin	--	61.5 > 58.5	2	14	0.708	-8.81987	Not a potential COC
Vanadium	--	67.6 > 46.2	6	14	0.436	-1.46951	Not a potential COC
Zinc	--	460 > 90.2	9	14	0.273	-0.30614	Not a potential COC

1. "95% UTL background?" indicates whether the maximum measured OU4 concentration exceeded the maximum reported concentration from OU1 and/or OU2 background surficial soil data.
2. "Slippage test: exceeded?" indicates the number of values OU4 measurements of this analyte which exceeded the maximum reported concentration from OU1 and/or OU2 background surficial soil data.
3. "Slippage test: allowed (5%)?" indicates how many OU4 measurements can be outside the maximum reported background surficial soil concentration using the nonparametric Slippage Test statistic and a probability of < 5%.
4. "Quantile test?" provides the calculated p-value using the nonparametric Quantile Test statistic; all values < 0.05 suggest that the analyte is a potential COC.
5. "Gehan test" provides the calculated test statistic using the nonparametric Gehan Test; all values > 1.645 suggest that the analyte is a potential COC.
6. "Preliminary conclusion" identifies whether an analyte is a potential COC based on the nonparametric statistical evaluations; all potential COCs have been placed in bold face in the first column of this table.

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To: Andy Ledford **Date: March 21, 1995**
From: Phil Nixon

Subject: Analysis of Team Meeting Minutes with Respect to Pondcrete and Sludge Processing Criteria

I have gone back through the DOE/EPA/CDPHE team meeting minutes to see if we specifically discussed the criteria that were established for pondcrete/sludge processing. I looked back as far as the June 29, 1994 minutes and found that we never presented the detailed set of criteria that were established and inserted into the IM/IRA-EA Decision Document. Up until very recently, the EPA/CDPHE have taken little interest in the sludge/pondcrete processing with the exception that there be not free liquids. Attached are notes from some of the few discussions that we have had.

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4. Physical Form of the Backfill

It was agreed that the physical form of the backfill was a detailed design issue that would be determined by the ability of the backfill materials to be compacted to an acceptable level for the construction of a stable engineered cover. It was previously determined at the July 25, 1994 team meeting that the sludge would be dewatered via minimal treatment prior to being consolidated beneath the engineered cover.

5. Consideration of DOE Order 5820.2A and Related DOE Policies

Steve Howard presented information that DOE order 5820.2A does not provide a 10,000 year design criteria for low level radioactive waste disposal facilities. The 10 CFR 61 regulation is for commercial disposal facilities which does not apply to remediation activities. It is thought that the confusion might have originated because the State of Colorado and the DOE are working together to establish criteria and assess potential sites for a Statewide low level radioactive waste disposal facility.

6. Cost Effectiveness of Onsite Disposal vs. Offsite Disposal

It was agreed that the cost data previously provided was sufficient to meet the requirements of this item. It is noted that the current cost for the only potentially available waste disposal facility is $57 per cubic foot of waste disposed. It is important to note that packaging and transportation costs would also have to be factored into complete cost comparisons. It was agreed that offsite disposal was not currently a cost effective waste management alternative.

7. Risk Management Associated with Offsite Disposal

It was discussed that this topic was not an important issue to resolve due to the fact that the accessibility of waste disposal sites in the near term was extremely limited and potentially problematic with respect to political interests. In addition, it was agreed that offsite disposal was not a cost effective alternative. It was noted that an assessment of the risks associated with the transportation may become an important issue if wastes were shipped offsite.

8. Access and Availability of Offsite Disposal vs. an Onsite LLMW Disposal Facility

The currently existing low level mixed waste (LLMW) disposal facilities include :

1. Nevada Test Site
2. Hanford
3. Envirocare

Frazer Lockhart indicated that the Nevada Test Site is currently not accepting LLMW. The State of Nevada has offered a suit against the DOE concerning the sites Environmental

scenarios where the liners must be excavated and crushed in order to prevent differential settlement of the engineered cover. In addition the mass loading of contaminants is higher for the engineered cover scenarios because these scenarios include the volume of hillside contaminated soils. It was agreed that these modeling results indicate that DOE should not have to solidify to sludge prior to consolidating the dewatered sludge beneath the engineered cover. In addition, the engineered cover will be designed with a low-permeability layer.

4) Identification of Additional Technical Data that Needs to be Re-evaluated and Establishing a Path Forward for Concluding the Dispute Resolution Review Period

Arturo Duran stated that the EPA would like the DOE to conduct a feasibility analysis with respect to the use of upgradient ground water control measures that may eliminate the need for the subsurface drainage layer. It was discussed that this might improve the engineered cover by reducing the height and slope because the total excavation of the IHSS 101 would not be required. Arturo Duran also indicated that this might allow the team to return to the strategy for clean closing SEP 207-C to reduce the impacts from the hillside stability concerns in the area of SEP 207-C. Frazer Lockhart Requested that the design criteria be established. It was discussed that the design criteria included the following:

1. The upgradient ground water control mechanism must prevent ground water from contacting the consolidated contaminated media for the 1000 year system design life

2. The ground water would have to be collected and removed from the area so that the ground water head build-up would not cause a failure of the control mechanism

3. Any mechanical device that was needed to remove ground water from the drainage system would not have to function for the 1000 year time period because it will be assumed that the ground water at the Rocky Flats will be remediated

4. The upgradient ground water control mechanism needs to be tied into competent bedrock (estimated 20 to 30 feet)

5. The upgradient ground water control method must function to dewater the north hillside under the same expected ground water rise that was used to design the subsurface drainage layer.

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3) Phil Nixon provided information concerning the upgradient ground water concentrations for the OU4 contaminants of concern (COCs) from 3 upgradient ground water wells in the vicinity of OU4. This information was provided for informational purposes and does not require review or action.

4) Modeling Results incorporating Sludge in the IM/IRA

Phil Nixon presented the results of the modelling under unsaturated conditions that estimated the potential for leachate generation when untreated sludge was consolidated beneath the engineered cover. The assumptions that were used for the modelling include:

1. Data for metals was from the Haliburton database

2. Data for radionuclides was from the Weston Database since this is the only isotope specific data

3. The sludge was assumed to be dewatered and dried, but not solidified

4. The sludge was rinsed during dewatering so that any liquid remaining in the sludge after dewatering would be clean water as opposed to contaminated SEP liquids.

The model was run under 3 scenarios:

1. No Action - The sludge was placed on top of intact liners.

2. Engineered cover without an low-permeability layer - The sludge was mixed with excavated soils and crushed liners. The engineered cover would not have a low permeability layer.

3. Engineered cover with low-permeability layer - The sludge was mixed with contaminated soils and crushed liners. The engineered cover design included a low permeability layer.

The modelling results indicate that the engineered cover design without the low-permeability layer would not meet the ground water comparison criteria at the toe of the engineered cover. However, the no action and the engineered cover with a low-permeability layer would meet the ground water comparison criteria at the toe of the engineered cover. The explanation for this is that under the no action scenario the liner continues to function as a low permeability layer which impedes infiltration. This is not the case for both the engineered cover

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To: Andy Ledford/Harlen Ainscough **Date: March 21, 1995**
From: Phil Nixon

Subject: Placement of a TU in a permitted unit

Enclosed is a statement out of the CAMU regulation which we interpret to mean that it is appropriate to locate a Temporary Unit (TU) in a permitted unit.

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FROM THE DESK OF DAVE KENNEDY

Date: March 20, 1995 Phone: 831-8100

To: Phil Nixon

From: Dave Kennedy

Subject: Applicability of TU Placement on a Interim Status Unit

In response to the question, "Is the placement of a temporary unit on an existing Interim Status pad an appropriate action?"

After reviewing the final rule for CAMU/TU published February 16, 1993, (Volume 58, No. 29) Section C (1), Scope and Applicability of Today's Rule, indicates; "Today's final rule specifies that only tanks and container storage units used for the treatment or storage of remediation wastes will be eligible for designation as temporary units." Therefore, the requirements established in the scope and applicability section (page 8673 attached) have been met by designating the 750 and 904 pads as the TU locations, as established in the IM/IRA-EA DD.

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CAMU at interim status facilities is a section 3008(h) order (or possibly a § 7003 order). The Agency recognizes that owner/operators of interim status facilities may prefer another mechanism (e.g., the closure plan approval process), which would allow accelerated cleanups to proceed outside the context of an enforcement order. While EPA acknowledges that there may be advantages to such an approach, it raises issues that are outside the scope of today's rulemaking. EPA will consider possible options as it develops the final subpart S rulemaking.

8. Effect of CAMU Designations on Other Remedy Selection Decisions (§ 264.552(h))

As is discussed earlier in this preamble, the designation of a CAMU does not change EPA's authority to address clean-up levels, media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions. This point is clarified in § 264.552(h).

C. Temporary Units (TUs) (§ 264.553)

The temporary unit provisions (§ 264.551(b)) as proposed in July, 1990, would have provided the Regional Administrator with the authority to modify 40 CFR part 264 or 265 regulatory design, operating, or closure standards for units (except incinerators or non-tank thermal treatment units) used for the storage or treatment of hazardous waste during corrective action, as long as those alternative standards were protective of human health and the environment and complied with statutory requirements. Under this proposal, the operation of such units would have been restricted to 180 days; however, the Regional Administrator could grant extensions to the operating life of such unit(s) in situations where unforeseen, temporary, and uncontrollable circumstances occurred, and where the owner/operator was actively seeking alternatives to continued use of the unit. See 55 FR 30842 (July 27, 1990). If the owner/operator failed to seek alternatives to the continued use of the temporary unit, the Agency would deny further extensions and require the owner/operator to retrofit the unit to meet applicable part 264 and part 265 standards, or remove the waste and close the unit.

In modifying 40 CFR part 264 and part 265 design, operating, and closure regulatory standards for temporary units, proposed § 264.551(b) required the Regional Administrator to consider certain factors relating to the length of time that the unit would be in place, the amount of wastes to be managed, the physical and chemical characteristics of the wastes, and the site characteristics that might influence the migration of any potential releases. The alternative standards developed based on these factors would be specified in the facility's permit or order.

Today's rule finalizes the temporary unit provisions in § 264.553, with minor changes. EPA believes that the temporary unit concept is both sensible and practical within the context of remediation, and will facilitate implementation of RCRA sections 3004(u), 3004(v), and 3008(h). EPA believes that the site-specific review and oversight that is provided in the context of investigating and making remedial decisions for corrective action allows the Agency to ensure protection of human health and the environment for short-term operation of units that may not meet the full set of standards specified for long-term use of such units under current RCRA regulations.

As a general matter, EPA believes that the flexibility provided for in today's rules for CAMUs and temporary units will also encourage the development of new and innovative treatment technologies. In particular, this rule will help further the Administrator's commitment to remove barriers to the use of bioremediation. Consistent with this goal, in the Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris proposed rule (57 FR 958, Jan. 9, 1992), the Agency solicited comment on a temporary version (57 FR 981) of the containment building (later promulgated in the final Debris Rule on 8/18/92). As proposed, these temporary containment buildings would have allowed for the treatment of hazardous waste in temporary structures that would not have been subject to the same stringent design and construction requirements of the containment building promulgated on August 18, 1992. (See 57 FR 37268). Comments on the proposal were almost universally favorable. However, EPA decided to defer a final rule on such buildings pending further analysis.

The CAMU provisions promulgated today achieve most of the objectives of the temporary containment building proposal (e.g., within a CAMU, structures may be used to implement bioremediation systems as an integral part of a remediation). The design and operating plans for such systems will be approved on a case-by-case basis within the context of other waste management activities that will take place within a CAMU. The use of bioremediation technologies as part of CAMUs should greatly expand the base of experience with the use of these treatment technologies. EPA will consider whether separate regulations for temporary containment buildings, as a distinct type of RCRA unit, should be developed in the future.

1. Scope and Applicability of Today's Rule (§ 264.553(a))

Today's rule narrows the applicability of the temporary unit provision. The proposed rule for temporary units would have allowed any unit (except incinerators and non-tank thermal treatment units) used for the treatment or storage of hazardous wastes during corrective action to be designated as a temporary unit. This would have included land-based units such as waste piles. Today's final rule specifies that only tanks and container storage units used for the treatment or storage of remediation wastes will be eligible for designation as temporary units.

EPA expects that land-based waste management activities are more effectively addressed under today's CAMU provisions. For example, under today's CAMU provisions, a waste pile could be designated as part of a CAMU. This would enable the Regional Administrator to specify protective liner requirements and other design/operating requirements for the pile that are appropriate to waste and site conditions, and the length of time the unit may operate. Further, remediation wastes could be placed into the pile without triggering LDRs, thereby enabling one of the most frequent uses of piles, the temporary staging of wastes prior to on-site treatment, or transportation to off-site disposal (in which case, the land disposal restrictions would apply). Thus, designating the pile as part of the CAMU will enable sensible and protective waste management actions to be implemented. Because the provisions already allow flexibility for waste management in land-based units, the temporary unit provisions for those units are unnecessary and thus have been omitted in the final rule.

In addition, the temporary unit provisions will not apply to subpart X units (e.g., "modu-tanks"). EPA believes that the subpart X standards already provide sufficient flexibility for the Regional Administrator to set conditions appropriate to short-term use of a miscellaneous unit at a remediation site. Also, some miscellaneous units involve land-based waste management activities; such activities could be addressed and included as part of a CAMU, in a manner similar to waste piles.

The temporary unit proposed rules specified that the Regional